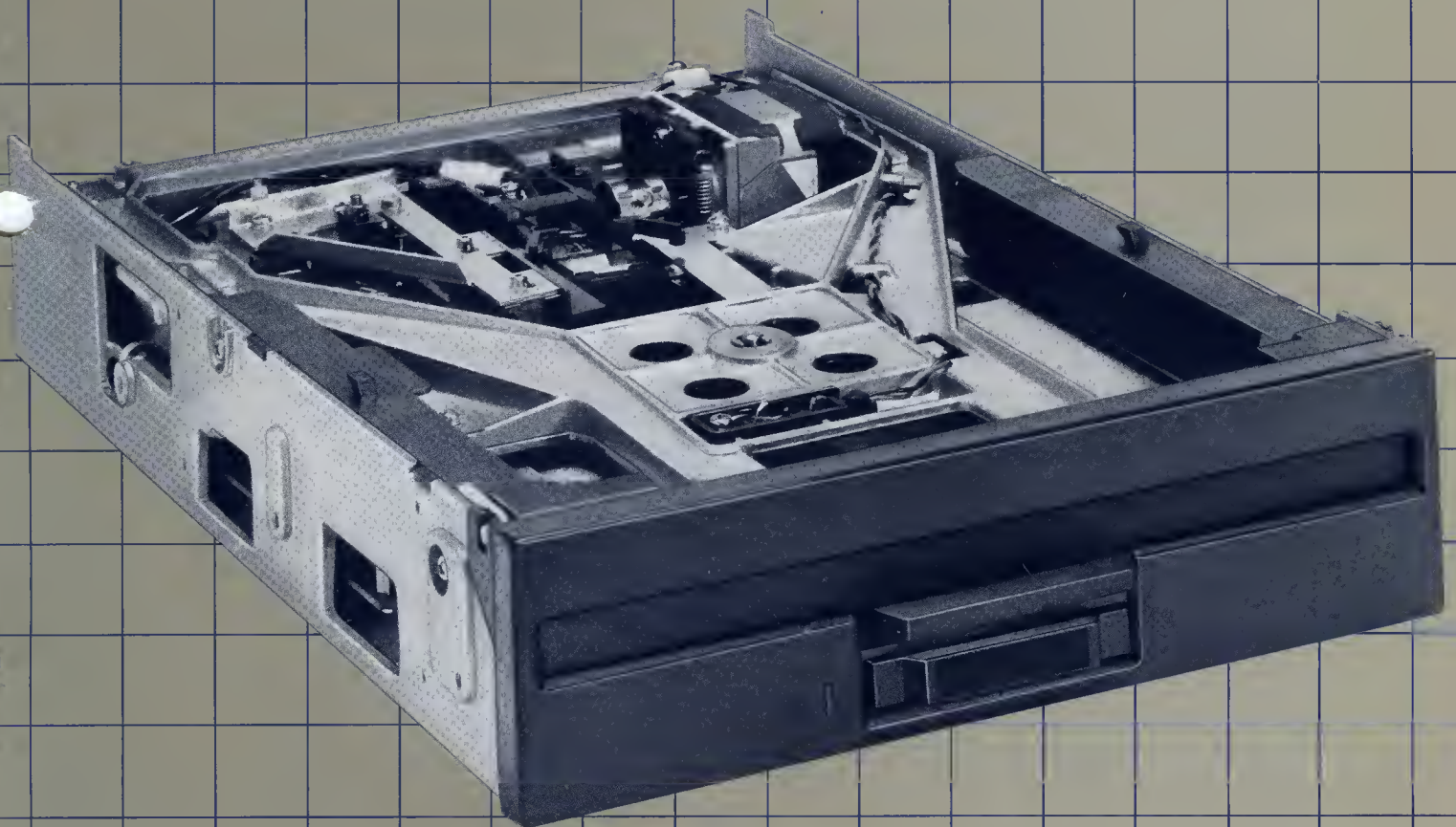




**MITSUBISHI**  
COMPUTER PERIPHERALS

**8" HALF-HEIGHT  
FLEXIBLE  
DISK DRIVE**  
**M2896-63**



Mitsubishi's technological competence has once again delivered.

Introducing the M2896-63, a premier 8-Inch Half-Height Flexible Disk Drive, designed to fulfill the most demanding storage requirements for the dimension conscious OEM. This high speed double sided, double density disk drive accurately stores 1600 kilobytes per disk. And, its unique high

quality Gimbal Head design assures excellent media integrity and longer wear with SOFTOUCH control. Strategic component locations have been isolated to help minimize temperature fluctuations and resulting operational problems. Long on high performance features, the M2896-63 is very affordable, especially when considering its compatibility and interchangeability with industry standards, like

#### INCREASED STORAGE

Half the height and half the weight of its 8-inch predecessors, the M2896-63 can be mounted in a standard 19-inch RETMA rack as a set of parallel units.

#### MEDIA COMPATIBILITY

Interchangeable with IBM formatted media (diskette 1,2,2D) with or without write-precompensation.

#### SAFE SOFTOUCH HEAD

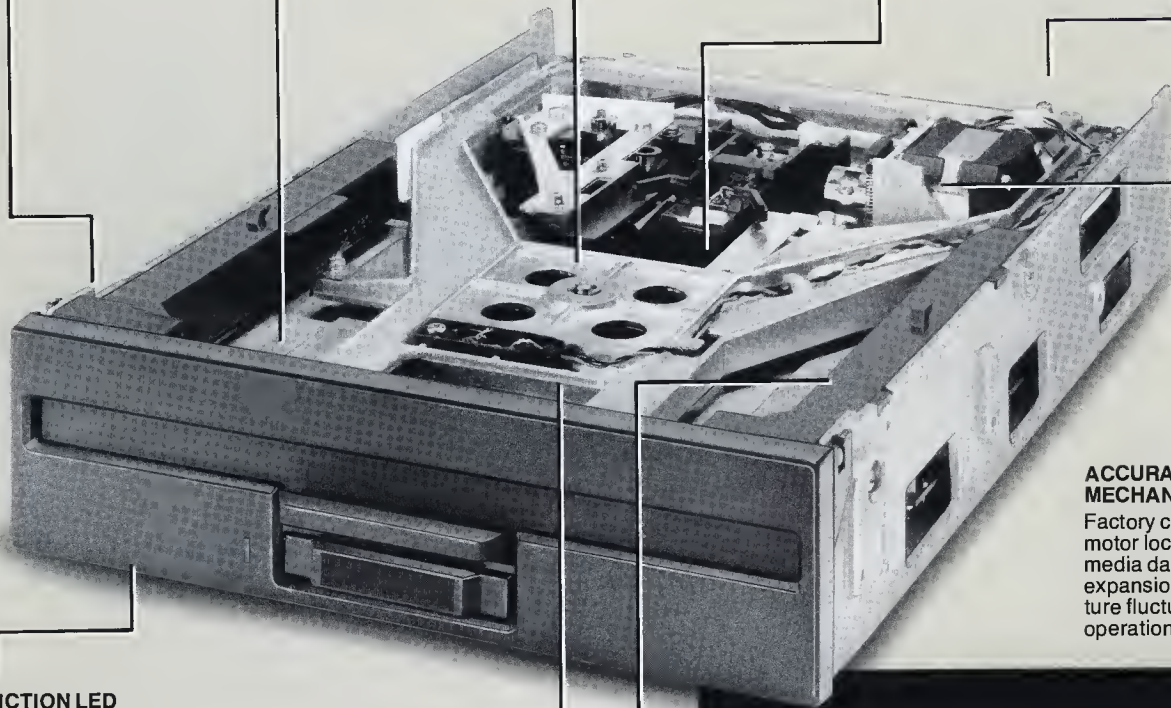
The head load mechanism uses a closed-loop electric damping system employing a magnetic sensor. The magnetic heads load on the medium surface so softly that almost no scratching is detected by repeated loading and unloading (Tap-Tap).

#### UNIQUE ON TRACK GIMBAL HEAD

Enhanced tracking capability of the medium surface is provided by a new type of circular Gimbal spring in the read/write head suspension mechanism. Media Tap-Tap life can provide over 100,000 load/unload operations from the same point on the same track.

#### PLUG COMPATIBILITY

The M2896-63 is plug-compatible and user-option-compatible to the M2894-63.



#### MULTI-FUNCTION LED

Indicates drive/program selection or command reception.

#### HIGH QUALITY INTERCHANGEABILITY

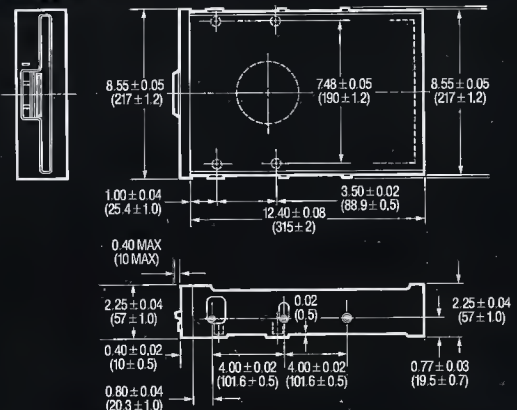
Media need not be specifically designated by brand name. Diskette quality variation negligibly affects the drive performance. Stable media interchangeability is allowed by a window timing margin and off-track margin. Temperature and humidity ranges are fully covered with excellent stability.

#### DC BRUSHLESS DIRECT DRIVE MOTOR

A direct-drive, dc motor for the spindle drive eliminates the need for a drive pulley and belt. No more AC power requirements, pulley changes—or the problems associated with belt-driven drives thus providing better serviceability.

#### ACCURATE POSITIONING MECHANISM

Factory calculated stepper motor location prevents media damage or disk expansion (due to temperature fluctuations) during operation.



Note: all dimensions are inches [dimensions in ( ) are in mm]



the Shugart SA850R.

If specifications require "high performance affordability" for error-free double density operation, in half-height dimensions—the choice is made. The Mitsubishi M2896-63 is ready to deliver.



## Specifications

### Performance Specifications

	M2896-63
Memory capacity (kilobytes)	
Unformatted Per Disk	1600
Per Surface	800
Per Track	10.4
Formatted (256 bytes/track)	
Per Disk	985
Per Surface	492
Per Track	6.66
Transfer rate (kilobits/sec)	500
Mean Latency Time (milliseconds)	83
Access Time (milliseconds)	
Track to track	3
Average	91
Settling time	15
Head-loading time	35

### Functional Specifications

Recording density (bits per inch)	6816
Flux density (flux changes per inch)	6816
Encoding method	MFM/M <sup>2</sup> FM
Track density (track per inch)	48
Number of cylinders	77
Number of tracks	154
Number of heads	2
Rotation speed (RPM)	360
Rotation period (milliseconds)	166.7
Index	1

### Physical Specifications

DC power requirements	
+5V	+5V ± 5%, 1.0A typical
+24V	+24 ± 10%, 1.0A typical
Operating environmental conditions	
Ambient temperature	41°F-109°F (5°C-43°C)
Relative humidity	20%-80% [Maximum wet bulb temperature: 85°F (29°C)]
Non-operating environmental conditions	
Ambient temperature	14°F-122°F (-10°C-50°C)
Relative humidity	5%-95%
Physical dimensions (except front panel)	
Height	2.25 inches (57mm)
Width	8.55 inches (217mm)
Depth	12.40 inches (315mm)
Front panel dimensions	2.25 x 8.55 inches (57 x 217mm)
Weight	7.8 lbs (3.5 kg)

### Reliability Specifications

MTBF	10,000 POH or more
MTTR	30 minutes
Unit life	5 years or 20,000 power on hours, whichever occurs first
Medium life	
Rotational life	3.5 x 10 <sup>6</sup> pass/track or more
Tap-Tap	10 <sup>5</sup> or more
Error rate	
Soft read error	10 <sup>-9</sup> bit
Hard read error	10 <sup>-12</sup> bit
Seek error	10 <sup>-6</sup> bit

### INPUT CONTROL LINES (CONTROLLER-TO-DISK DRIVE)

GROUND	SIGNAL	DESCRIPTION
1	2	ALTERNATE I/O *(WRITE CURRENT SWITCH)
3	4	ALTERNATE I/O
5	6	ALTERNATE I/O
13	14	SIDE SELECT
15	16	ALTERNATE I/O (IN USE)
17	18	ALTERNATE I/O (HEAD LOAD/ MOTOR START)
25	26	DRIVE SELECT 1
27	28	DRIVE SELECT 2
29	30	DRIVE SELECT 3
31	32	DRIVE SELECT 4
33	34	DIRECTION SELECT
35	36	STEP
37	38	WRITE DATA
39	40	WRITE GATE

### OUTPUT STATUS LINES (DISK DRIVE-TO-CONTROLLER)

7	8	ALTERNATE I/O (TRUE READY)
9	10	ALTERNATE I/O (TWO-SIDED)
11	12	ALTERNATE I/O (DISK CHANGE)
19	20	INDEX
21	22	READY
41	42	TRACK 00
43	44	WRITE PROTECT
45	46	READ DATA
23	24	(NOT USED)
47	48	(NOT USED)
49	50	(NOT USED)

NOTE: \* ( ) are optional use.

Note: Specifications are subject to change without notice.



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